

Programme Specification

BSc Meteorology and Climate with International Foundation Year UCAS Code: F792
For students entering Foundation year in September 2024 UFMETCLIFF

This document sets out key information about your Programme and forms part of your Terms and Conditions with the University of Reading.

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| Awarding Institution | University of Reading |
| Teaching Institution | University of Reading |
| Length of Programme | 4 years |
| Accreditation | The programme outlined here is approved by the Royal Meteorological Society as appropriate academic training for candidates seeking the qualification <i>Chartered Meteorologist</i> |
| QAA Subject Benchmarking Group | N/A |

Programme information and content

This programme is designed to equip you with the knowledge and tools needed for a wide range of careers in meteorology, climate and related environmental science disciplines.

At the core of the programme is the detailed scientific understanding of the Earth's weather and climate systems. The appropriate laws of physics will be applied to the Earth's atmosphere, oceans and wider climate system using mathematical methods. These scientific principles are the building blocks of all weather forecasting and climate prediction computer models and so hold the key to understanding the main tools of weather and climate scientists.

The programme offers a broad range of options so that whether you are thinking of a career in operational weather forecasting, climate and environmental consultancy, scientific and academic research or working with observing systems and instruments there will be a set of compulsory and optional modules to provide you with the knowledge and tools necessary to move onto that career.

As well as in depth coverage of the core science this degree will also have a strong focus on science communication. In many branches of weather and climate science, communicating scientific concepts and results in an appropriate way for the audience is a key skill. Whether you are producing weather forecasts for commercial customers, advising large organisations of the potential impacts of climate change on their activities or making complex scientific concepts accessible to non-specialists, communication is as important as the fundamental scientific understanding.

This programme includes a foundation year (Part 0) provided through the International Foundation Programme (IFP) which provides access to higher education in Britain to international students who do not possess the normal entry requirements of GCE Advanced level qualifications or the equivalent. Through the part 0 you will be equipped with subject specific and general study skills which will enable you to cope with the demands of

undergraduate study. This is achieved through the provision of high quality teaching which is sympathetic to the needs of students from a wide range of educational backgrounds.

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| Foundation year: | In the Foundation Year you will have the opportunity to develop transferable skills through the provision of a compulsory credit-bearing Academic Skills module. The key skills relate to Critical thinking, Essay Writing, Research Referencing and avoiding plagiarism, Group Work and Projects, Presentations and Assessment and examination Techniques. In addition, you will study core mathematics and physics modules to develop the subject skills and knowledge needed to prepare you for undergraduate study in Part 1. Those needing to improve their English language skills will also study the two Academic English modules. |
| Part 1: | Part 1 will introduce you to the fundamental scientific principles and terminology that apply to the Earth's weather and climate systems. This will be supported by study of some important mathematical knowledge and techniques which will allow the further development of your scientific understanding. You will also be taught basic computer programming and laboratory skills. |
| Part 2: | Part 2 builds an in-depth understanding of the physics and dynamics of the Earth's weather and climate systems. The fundamental science and current state of knowledge of climate change will be introduced. Computing skills for numerical modelling and weather and climate data analysis will be taught, along with more supporting mathematics. |
| Part 3: | Part 3 gives you the chance to select modules appropriate for your chosen career pathway, or alternatively select modules across the range of pathways. Additionally you will complete a research project on a topic of your choice, either from a list supplied by the department or on a topic which you specify yourself. |

Programme Learning Outcomes - BSc Meteorology and Climate with International Foundation Year

During the course of the Programme, you will have the opportunity to develop a range of skills, knowledge and attributes (known as learning outcomes) For this programme, these are:

| Learning outcomes | |
|--------------------------|--|
| 1 | Describe and explain the core physical principles behind Earth's weather and climate systems on both local and global scales. |
| 2 | Select and apply appropriate mathematical and statistical methods to describe and analyse the Earth's weather and climate systems. |
| 3 | Design, execute and report the results of a laboratory experiment or investigation. |
| 4 | Employ a range of laboratory and fieldwork skills to measure and quantify aspects of weather and climate. |
| 5 | Construct simple conceptual and mathematical models from physical principles and use them to explore the behaviour of weather and climate systems. |
| 6 | Apply concepts of risk and uncertainty to weather hazards and climate change impacts. |

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| 7 | Analyse large weather and climate related datasets using appropriate computing tools and methodologies. |
| 8 | Create documentation associated with a computational investigation, including computer code, in a way which is reproducible by other scientists. |
| 9 | Explain the relevance to society of the weather and climate systems you have studied, including critical evaluation of how they impact upon policy and risk management. |
| 10 | Perform in-depth research into a specific area of meteorology and climate science and communicate your findings to a scientific audience. |
| 11 | Communicate scientific information to a diverse range of stakeholders such as government agencies, commercial companies and the general public. |

You will be expected to engage in learning activities to achieve these Programme learning outcomes. Assessment of your modules will reflect these learning outcomes and test how far you have met the requirements for your degree.

To pass the Programme, you will be required to meet the progression or accreditation and award criteria set out below.

Module information

Part 0 comprises 140 credits and Parts 1, 2 and 3 each comprise 120 credits, allocated across a range of compulsory and optional modules as shown below. Compulsory modules are listed.

Foundation modules:

| Module | Name | Credits | Level |
|--------|----------------------|---------|-------|
| IF0ACA | Academic Skills | 20 | 0 |
| IF0CMA | Core Mathematics | 20 | 0 |
| IF0QM | Quantitative Methods | 20 | 0 |
| MA0FM | Further Mathematics | 20 | 0 |
| MA0PH | Physics | 20 | 0 |

If your level of English is below the standard specified for undergraduate study, you will take the two 20 credit modules Academic English 1 (IF0AE1) and Academic English 2 (IF0AE2). The remaining credits will be made up of optional modules available from a list provided by the International Foundation Programme.

Part 1 Modules:

| Module | Name | Credits | Level |
|--------|----------------------------------|---------|-------|
| MA1CA | Calculus | 20 | 4 |
| MA1LA | Linear Algebra | 20 | 4 |
| MT1ITM | Introduction to Meteorology | 20 | 4 |
| MT1PNW | Physics of the Natural World | 20 | 4 |
| MT1SES | Skills for Environmental Science | 20 | 4 |
| MT1WCF | Weather and Climate Fundamentals | 20 | 4 |

Part 2 Modules:

| Module | Name | Credits | Level |
|--------|---|---------|-------|
| MT2AOD | Atmosphere and Ocean Dynamics | 20 | 5 |
| MT2AP | Atmospheric Physics | 20 | 5 |
| MT2CLC | Climate Change | 20 | 5 |
| MT2MM | Mathematical Methods for Weather and Climate Science | 20 | 5 |
| MT2NSM | Numerical and Statistical Methods for Weather and Climate Science | 20 | 5 |

Remaining credits will be made up of optional modules available in the School of Mathematical, Physical and Computational Sciences or modules from an approved list.

If you take a year-long placement or study abroad, Part 3 as described below may be subject to variation.

Part 3 Modules:

| Module | Name | Credits | Level |
|--------|------------------|---------|-------|
| MT3RP | Research Project | 40 | 6 |

All remaining credits in Part 3 are optional. Remaining credits will be made up of optional modules available in the Department of Meteorology.

Placement opportunities**Placements:**

You may be provided with the opportunity to undertake a credit-bearing placement as part of your Programme. This will form all or part of an optional module. You will be required to find and secure a placement opportunity, with the support of the University.

Optional modules:

The optional modules available can vary from year to year. An indicative list of the range of optional modules for your programme can be found online in the Course Catalogue. Details of optional modules for each part, including any additional costs associated with the optional modules, will be made available to you prior to the beginning of the Part in which they are to be taken and you will be given an opportunity to express interest in the optional modules that you would like to take. Entry to optional modules will be at the discretion of the University and subject to availability and may be subject to pre-requisites, such as completion of another module. Although the University tries to ensure you are able to take the optional modules in which you have expressed interest this cannot be guaranteed.

Teaching and learning delivery:

Core knowledge on this programme will be delivered through lectures, supported by a wide range of learning reinforcement activities appropriate to the material.

These will include;

- Problems classes with in-class support
- Laboratory classes using meteorological instruments and fluid dynamics experiments
- Computer lab classes to introduce you to the fundamental elements of programming
- Online material such as quizzes, weather system analysis practicals and programming challenges. Approximately 30% of your overall programme will be delivered through a blended approach using on-line materials supported by in-person tutorial sessions, discussion boards etc.
- Field work, both on the University's own Atmospheric Observatory and on an optional residential field trip

All modules will require significant guided independent learning. This may involve reading set texts or published papers, completing problem sheets, writing up laboratory experiments or following weather and climate related news stories in the media.

Elements of your programme will be delivered via digital technology.

The International Foundation Programme will include at least 15 hours of classroom-based teaching each week.

The scheduled teaching and learning activity hours and amount of technology enhanced learning activity for your programme will depend upon your module combination. In addition, you will undertake some self-scheduled teaching and learning activities, designed by and/or involving staff, which give some flexibility for you to choose when to complete them. You will also be expected to undertake guided independent study. Information about module study hours including contact hours and the amount of independent study which a student is normally expected to undertake for a module is indicated in the relevant module description.

Accreditation details

The programme outlined here is approved by the Royal Meteorological Society as appropriate academic training for candidates seeking the qualification *Chartered Meteorologist*.

Assessment

The assessment strategy for this degree programme comprises three main strands.

First is the assessment of core scientific/mathematical knowledge. This will be done partly through the use of more traditional assessment methods such as problem sheets, class tests and exams, coupled with online assessment methods such as quizzes.

With a key theme of science communication running through the degree the next strand of assessment will be based on how students are able to communicate and apply their knowledge through authentic assignments based on scientific and report writing skills for a

range of different audiences. These skills will be introduced during Part 1, developed in Part 2 and mastered during part 3, with the method of communication at this stage varying depending on the optional module choices. All students will produce a dissertation on their research project, which will be written in the style of a scientific research paper.

A third strand of assessment will be based on the transferable skills that run through the degree programme. In particular the production, running and documentation of computer code to solve numerical problems or analyse weather and climate datasets will be developed and assessed using a range of different software tools and code libraries.

Details of assessment methods for individual modules are contained in the relevant module description forms.

Progression

Foundation Year

To achieve a threshold performance in the Foundation Year, a student will normally be required to:

- (i) Obtain an overall average of 40% over 120 credits taken in Part 0;
- (ii) Have no more than 40 credits of modules at Part 0 with marks below 35%; and
- (iii) Achieve a mark of at least 40% in the Academic Skills module.

In order to progress from Part 0 to Part 1 and be eligible for transfer to BSc Meteorology and Climate a student must achieve a threshold performance; and

- (i) at least 40% in IF0ACA Academic Skills and 55% in each of IF0AE1 Academic English 1 and IF0AE2 Academic English 2 (if taken)

and achieve the following in the remaining 120 credits or 80 credits (if taking Academic English)

- (i) at least 55% in IF0CMA Core Mathematics and IF0QM Quantitative Methods;
- (ii) at least 50% in MA0FM Further Mathematics and MA0PH Physics;
- (iii) at least 40% in any other modules.

The achievement of a threshold performance at Foundation Year qualifies a student for a Certificate of Completion if they leave the University before completing the subsequent Part.

Part 1

To achieve a threshold performance at Part 1, a student will normally be required to:

- (i) Obtain an overall average of 40% over 120 credits taken in Part 1;
- (ii) Obtain a mark of at least 40% in individual modules amounting to not less than 80 credits taken in Part 1; and
- (iii) Obtain marks of at least 30% in modules amounting to 120 credits.

In order to progress from Part 1 to Part 2, a student must achieve a threshold performance;

The achievement of a threshold performance at Part 1 qualifies a student for a Certificate of Higher Education if they leave the University before completing the subsequent Part.

Transferring from a Joint Honours to a Single Honours programme

Students are able to transfer from a Joint Honours to a Single Honours programme in one of their joint subject areas at the end of Part 1, subject to fulfilling the Part 1 University Threshold Standard, achieving marks of at least 40% in at least 40 credits of modules in the subject to which they wish to transfer, and fulfilling any programme-specific progression rules for the Part 1 Single Honours Programme to which they wish to transfer.

Students who transfer from a Joint Honours to a Single Honours programme may not have taken all of the Part 1 modules listed in the Single Honours Programme Specification. The modules which they have taken will be shown on their Diploma Supplement.

Part 2

To achieve a threshold performance at Part 2, a student shall normally be required to:

- (i) Obtain a weighted average of 40% over 120 credits taken in Part 2; and
- (ii) Obtain marks of at least 40% in individual modules amounting to at least 80 credits taken in Part 2; and
- (iii) Obtain marks of at least 30% in individual modules amounting to at least 120 credits, except that a mark below 30% may be condoned in no more than 20 credits of modules owned by the Department of Mathematics and Statistics.

In order to progress from Part 2 to Part 3, a student must achieve a threshold performance;

The achievement of a threshold performance at Part 2 qualifies a student for a Diploma of Higher Education if they leave the University before completing the subsequent Part.

Classification

Bachelors' degrees

The University's honours classification scheme is based on the following:

Mark Interpretation

70% - 100% First class

60% - 69% Upper Second class

50% - 59% Lower Second class

40% - 49% Third class

35% - 39% Below Honours Standard

0% - 34% Fail

The weighting of the Parts/Years in the calculation of the degree classification is:

Three year programmes:

Part 2: one-third

Part 3: two-thirds

The classification method is given in detail in [Section 17](#) of the Assessment Handbook.

Additional costs of the programme

During your programme of study you will incur some additional costs.

The main additional cost for this programme is for an optional field trip in Part 3. There are no compulsory textbook purchases for this programme. A range of resources to support your curriculum, including textbooks and electronic resources, are available through the library. Reading lists and module specific costs are listed on the individual module descriptions.

Costs are indicative and may vary according to optional modules chosen and are subject to inflation and other price fluctuations. Estimates were calculated in 2023.

For further information about your Programme please refer to the Programme Handbook and the relevant module descriptions, which are available at <http://www.reading.ac.uk/module/>. The Programme Handbook and the relevant module descriptions do not form part of your Terms and Conditions with the University of Reading.

BSc Meteorology and Climate with International Foundation Year for students entering Part 1 in session 2024/25

7 July 2023

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